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Accounting for Unemployment – A Labour Market Perspective

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Accounting for unemployment – a labour market perspective

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Abstract. I examine whether prolonged high unemployment in Canada can be attributed to various 'structural' causes, rather than to demand deficiency as found by macroeconometric models. The answer is largely negative. Neither the dispersion of sectoral growth rates nor excessive and rigid real wages can convincingly account for most unemployment. Contentions to the contrary are based upon inappropriately partial analyses. Enduring shifts in industrial structure have, if anything, been declining. Labour mobility is high. Much unemployment lasts too long to be frictional. Fuller quantitative understanding of the nature of unemployment can be achieved only in a more general framework.

Rendre compte du chômage – Une approche par le marché du travail. L'auteur se demande si le chômage élevé et prolongé au Canada peut être attribué à diverses causes 'structurelles' plutôt qu'à une déficience de la demande comme le suggèrent les modèles économétriques. La réponse est en gros négative. Ni la dispersion des taux de croissance sectoriels ni la rigidité ou le trop haut niveau des salaires réels ne sauraient rendre compte du gros du chômage. Les allégations à l'effet que ce serait le cas sont construites sur des analyses trop partielles. S'il y a eu changement, il semble que les transformations fondamentales dans la structure industrielle ont ralenti. La mobilité des travailleurs est forte. Et trop de ce chômage dure trop longtemps pour être frictionnel. On ne peut donner une meilleure compréhension quantitative de la nature du chômage qu'en utilisant un cadre d'analyse plus général.

Presidential address, annual meeting of the Canadian Economics Association, 6 June 1987 McMaster University

A number of my colleagues at Queen's have discussed with me some of the contents of this paper. I owe particular debts to Charles Beach, the joint author of all recent work on unemployment in which I have been involved and to John Baldwin who not only discussed with me many of the issues raised here but also gave me most generous access to his work in progress. Charles Beach, Pierre Fortin, John Helliwell, Janet Neelin, and Tom Rymes commented most helpfully on an earlier draft. Kenneth Beirne gave much needed assistance in the final stages. Charlotte David prepared the manuscript. The Research Advisory Committee at Queen's provided some financing for the preparation of this paper and the Social Sciences and Humanities Research Council financed the Beach / Kaliski project. The errors are my own.

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'It's not ignorance that does the harm. It's all the things people know that aren't so.' (Radio broadcast)

In his presidential address Tom Wilson (1985) found that the deep recession of 1981–2 and slow recovery from it were caused principally by international circumstances and macro-economic policy, but that limitations to wage and price flexibility have been a contributing factor. Last year John Helliwell (1986b) concluded that neither a pure Keynesian demand model nor a market-clearing new classical one captured the Canadian reality as well as a more general model having some features of both. He also saw his results as 'strong evidence against some popular simplified models [that] will reduce the temptation for their policy implications to be taken seriously' (ibid., 621).

In what I view as a continuation of that discussion, I examine the still very incomplete recovery of the labour market from the recession and to what extent it can be attributed to various supply and demand influences. For reasons that I will try to explain, however, I find myself unable to follow Helliwell's advice to build a suitable model. This extension thus lacks the rigour and elegance of the two earlier texts. I hope that it might, nevertheless, help sort out what we do know from what we do not and so shed some light on policy implications.

Starting with the macro-economic foundations, I first sketch out very loosely how macro models might be expanded to permit a closer examination of the labour market. I then use this as a backdrop to examine the several attempts to account for the current high level of unemployment as a result of increased friction, structural change, and excessive and rigid real wages. An obvious issue is whether such results contradict the macro-economic findings. I find that none of these results stands up well to an examination in a broader context. The duration structure of unemployment also suggests persistent problems of either demand deficiency or chronic unemployment.

Let me start by insisting that, whatever may be true of other aspects of the economy, recovery in the labour market has been very slow and is still incomplete. This is evidenced not only by the unemployment rate[1] which continues more than 2 per cent above its 1980–1 level and well above most estimates of NAIRU, but also by a host of other indicators. While total employment had recovered by the end of 1984, the employment / population ratio – which takes into account the trend growth in the source population but not that in labour force participation – was still slightly below its early 1981 peak of just over 60 per cent at the end of 1986. Full time employment regained its pre-recession levels only in mid-1985. Until 1985 also, involuntary part time employment rose relatively to both full and part time employment.[2] In early 1981 the economy provided nearly 390 million hours of employment per month; that level, too, was not regained until 1985.

1 And by other unemployment rates that can be compiled (Jackson, 1987).

2 However, not all of that may be cyclical. On the other hand, some cyclical involuntary part-time employment – short time worked by those who normally work full time – is not captured by the statistics (Akyeampong, 1986).

One would like to know why the labour market is so slow to recover. Is aggregate demand simply insufficient, or are there structural problems as well? If the latter, what is the nature of these? Have frictions increased? Are real (product) wages too high to permit high employment? Is there a shortage of installed capacity? Is there a mismatch between the characteristics of available workers and the requirements of jobs? If there are such difficulties, why do they persist so long?

To answer questions of this sort in a satisfactory manner one would need an appropriate econometric model. I do not have such a model or even an analytical prototype.[3] I should, nevertheless, like to sketch out the broad outlines of what such a model might look like, in the hope that it might alert us to some of the problems in the much cruder discussion that follows.

Ideally, one would want a detailed labour market model embedded in a macro-economic model with considerable disaggregation by sector. It would be important that the macro model be general in Helliwell's sense, that is, that it permit one to examine a variety of possible shocks and gradual adjustments to them. One would want some sort of input-output specification to allocate the final demand vector by commodities and industries. These output demands would, through appropriate production functions and installed capacity and its evolution,[4] translate into the demand for labour. The model could not be recursive, however, since labour market outcomes will have an impact on disposable income, investment demand, and the choice between domestic and foreign sources of supply.

Exogenous supply disturbances, such as changes in the price of energy, will affect the labour market on both the demand and supply side. More generally, relative price changes, however produced, may, by affecting the cost of living and hence consumption real wages, shift the supply of labour to various sectors in terms of nominal wages and of real wages measured in terms of their particular products. They may also affect demand for both goods and factors.

In modelling the labour market itself, one would begin with a matrix of industry labour demand vectors by skill categories, location, and other attributes on the one hand and the supply matrix on the other. This last would consist of a supply of workpower – the population of working age, predetermined except for international migration – classified by demographic, human capital, location, and other attributes. The interaction between the two sides would then determine not only the multidimensional analogues of the wage, participation rate, and hours of work of the standard homogeneous labour market but also the patterns in which workers and jobs assemble themselves. Important issues would be those of overall demand (supply)

3 I say this quite unashamedly. Very good model builders confess to much dissatisfaction with the ones they have (Malinvaud, 1986; Sneessens and Dreze, 1986).

4 Malinvaud (1984, 47) argues that the speeds of price and wage adjustments are of a similar order of magnitude as those of capital accumulation.

deficiency and of mismatches between job requirements and worker characteristics and how rapidly these are diminished. Again, one might think of this system as a sort of enlarged and dynamized input-output analysis with quite detailed input requirements as functions of prices.

It should now be clear that specifying and solving, or, more likely, finding the sets of possible solutions to, such a model would be a daunting task. But it should also be clear – and that is really the point in terms of what follows – that if one could obtain such solutions, they would, at most, permit one to say something about the multipliers relating changes in endogenous variables to disturbances in exogenous ones. Various components of final demand, real wages, and other relative prices, 'international competitiveness,' industrial structure, installed capacity and its utilization, as well as employment and unemployment are all endogenous variables in this model. It would seem quite unlikely that we could speak of demand-deficient and structural, or of real-wage induced, frictional and mismatch unemployment as independent, mutually exclusive, or additive categories, however useful such categories might be as guides to policy. This, I now realize, is the insight of Lipsey's twenty-year-old discussion of earlier attempts to categorize unemployment (Lipsey, 1965).[5]

Until quite recently, there would have been little question that even if one could specify and solve an analytical model such as that just discussed, few of the data required to estimate it would be available. In this respect, matters have improved enormously in the past decade or so. Much new data has become available and much empirical work has followed. On the supply side, considerable progress has been made as a result of the 1975 revisions of the Labour Force Survey (Statistics Canada 71-001). The Revised Survey not only provides on a current basis a much richer and more detailed set of data but also has made it possible to examine aggregate monthly flows between the three labour market states of employment, unemployment, and non-participation and annual slices of individual experience in the market.

These survey data have been most usefully supplemented by various administrative data. Although the latter are only now becoming publicly available, a number of analyses based upon them have been published or circulated. The great advantage of these data is that they combine matched observations on personal characteristics, labour market experience, and earnings and other income into true longitudinal histories of individuals over fairly lengthy periods. Because of their universal coverage they can also yield very large samples, permitting quite detailed cross-classifications.[6]

Until very recently, no comparable information has been available on the

5 I decided, somewhat reluctantly, not to indulge in a running commentary on the many striking similarities between that 'structural unemployment' debate (and even earlier ones) and the current. But I do want to acknowledge Lipsey's anticipating many of the issues raised.

6 For some description of these data see McVey (1987). For some analysis and references see Hasan and de Broucker (1985), Baldwin and Gorecki (forthcoming), Magun (1982, 1984), and Robertson (1987).

demand side of the market. Now, Baldwin and Gorecki (1983 and forthcoming) have compiled some stock and flow information on firms and jobs. Very briefly, they document turnover behaviour similar to that observed on the supply side. Firms enter and exit on a substantial scale. They grow and decline. Jobs are continually being created and destroyed, both in growing and in declining industries. Gross flows, therefore, are much larger than net changes, just as they are on the supply side. It is now becoming possible to link this demand and supply information (McVey, 1987).

While it would be an exaggeration to say that we now have ample data to analyse issues of the sort raised above, the situation has clearly altered. It is at least arguable that we now have an embarrassment of information on the results of the operation of labour markets without any very clear detailed understanding of the forces that generate these results.

In what follows, I assess the success of two lines of inquiry that attempt to explain high unemployment in Canada as a result of two quite general 'micro-economic' forces – increasing friction and excessive and rigid real wages. I also enquire whether the structure of employment and unemployment and changes in them shed any light on the relative importance of frictions, mismatches, and aggregate demand as explanations of unemployment. Throughout, I shall try to keep in mind some of the general equilibrium / disequilibrium considerations alluded to in the prototype model sketched out above.

One possible answer to the question of what has gone wrong in the labour market is that nothing has. All is optimal. I do not believe that anyone has really been giving that answer since the recession, although the language used sometimes militates against that being as clear as it might be.

Lilien (1982b) for the United States, and, following him, Samson (1985) and Charette and Kaufmann (1984) for Canada have purported to show that nearly all unemployment, including the very high rates experienced in 1982 and 1983, could be accounted for by variations in a 'natural' rate of unemployment. The natural rate, in this context, is best thought of as the result of labour market frictions when the economy is in macro-economic equilibrium. Variations in it are attributed to variations in the dispersion of growth rates between industries. This is measured by the series of weighted standard deviations of each year's percentage change in employment across industries, SIGMA.

The idea is a very natural one in the context of turnover and search theory. A worker losing or leaving a job in a declining or slowly growing industry is more likely to have to look for one in another, more rapidly growing industry. It seems reasonable to suppose that the resulting unfamiliarity of workers and firms with one another might increase the duration of the search.[7]

In its essentials, the implementation of this model is to regress the

7 There is some verification. Alam, (1985) indicates that the first two unemployment spells experienced by workers displaced from jobs in the footwear industry were longer for those who left the industry than for those who did not, even though the average subsequent unemployment experience of the two groups was similar.

unemployment rate on its own past value, a trend, SIGMA, and Barro's (1977) money surprise as an indicator of departures from natural rate equilibrium. All but the last term and the error term in the regression sum to the natural rate. This turns out to account for nearly all unemployment in Canada, including that of the 1982 recession.

It should now be clear that the concept of 'natural rate' used by Lilien is a very inclusive one and carries no implication of private or social optimality. Lilien (1982a, b) himself is quite clear on this. Although he seeks his analytical foundations in search and implicit contract theory, he recognizes explicitly that both such unanticipated events as the oil shock, and such 'structural' considerations as location and firm-specific human capital are involved. He also recognizes 'that market failure accounts for part of our current [December 1982] unemployment problem' because of displaced workers' difficulties in financing the 'significant costs in training and geographic mobility' (Lilien, 1982a, 38). Clearly while the analytical context of the discussion is one of 'nominal vs. real' explanations of the business cycle, there is no way in which an annual cross-section variable, such as SIGMA can distinguish cyclical and irregular (reversible) from secular (persistent) differences in industry growth rates.

Not surprisingly, given the context of the discussion, the issue was soon raised of whether the divergences in sectoral growth rates measured by SIGMA might not themselves be, in part, the result of fluctuations in aggregate demand. Abrahams and Katz (1986) in their critique of Lilien's (1982b) paper showed that there were empirically relevant circumstances in which SIGMA would be so contaminated by aggregate demand[8] and proposed some tests. Beach and Kaliski (1985) made a case that these circumstances were relevant in Canada also and that some tests supported this view.

There have since been four attempts to purge Canadian SIGMA of its aggregate demand components and reassess its importance, including two by the original authors. There are basically two ways of doing this. One is to regress SIGMA on aggregate demand indicators and use only the residual from this regression as a pure sectoral effect. This is done by Landon (1985). The other is to use the aggregate demand indicators to purge employment growth in the several sectors of common elements. This is done by Charette and Kaufmann (1985), Samson (1986 and 1987) and Neelin (1983).[9]

The detailed periods, procedures, demand indicators, and results differ. In particular, the two original authors find the purged SIGMA still highly significant and performing much as before adjustment, whereas the two critics find its influence insignificant or much reduced.

The controversy just discussed deals with the appropriate measurement

8 Lilien (1982a) himself also subsequently addressed this issue.

9 Both procedures may overcorrect in the sense that they extract all common aggregate movements. These themselves may in part reflect structural disturbances (Abraham and Katz, 1986, 20; McCallum, 1986b, 8, 9).

of sectoral shifts. But the impact of appropriately measured 'mean preserving' sectoral shifts on unemployment might still be affected by the aggregate level of operation of the economy. It will be recalled that the mechanism by which sectoral shifts affect unemployment is that they cause those who lose employment in one industry to look for jobs in others. Lilien's original exposition of the analytics is in the context not of industries but of firms. In that context, it may be a sensible simplifying assumption that a firm does not 'simultaneously hire and lay off workers' (Lilien, 1982b, 782). But that assumption clearly will not do for an industry or for periods as long as a year. So long as there is turnover of jobs, firms, and workers there will be some level of frictional unemployment. If workers have to cross industry lines in their search, that level might well increase. Unemployment will increase further if there are increased mismatches in skill and location.

But does a given divergence of sectoral growth rates, caused by pure mean-preserving industry-specific shocks result in a particular number of workers crossing industry lines, regardless of aggregate demand conditions? It would seem not. Let me give two examples. First, if all sectors are in a situation of excess supply, each can draw on its own sector-specific unemployed labour force and differences in the several industries' rates of recovery should not affect the unemployment rate. Alternatively, suppose that there is no initial slack and that the overall rate of growth is sufficiently high that accessions exceed separations in all sectors, whether their sector-specific shocks are positive or negative. Clearly, the net additions to the work force must come from outside the current labour force. These new entrants and re-entrants need to find jobs and may well search longer (or more frequently) than those more familiar with the labour market. But there is no reason to suppose that they have any industry-specific attachments, and the duration of their search should, therefore, be unaffected by divergences in sectoral rates of growth.[10] I suggest that considerations of this sort imply that sectoral shifts are not additive to either secular or cyclical aggregate demand influences but interact with them in fairly complex ways. I suspect that a general disequilibrium model might be needed to sort the matter out properly.

The preceding discussion suggests that the issue of the contribution of sectoral shifts to total unemployment has not been resolved; indeed, that it cannot be resolved within such models as have been used. There is thus considerable doubt that all or most unemployment is 'natural,' even if that term is very broadly interpreted. That is not to deny that the natural rate of unemployment is higher than it was twenty or twenty-five years ago or that it

10 One could think of situations where these examples fail. For instance, relative wages may be affected by differential rates of growth and, in turn, may affect quits and interindustry search. (But quits are also directly related to overall labour market tightness, as Lilien (1982b, 786) recognizes). Again, persons outside the labour force may have quasi-attachments that may matter, through location and family and friends. But such considerations only reinforce my basic contention that we need a more complex model to sort the matter out. I owe the counter-examples to Dan Usher.

might be too high, in the sense of being worth reducing. There is considerable evidence that the natural rate has risen. The literature so arguing is older than the Lilien hypothesis and presents another challenge to it, to the extent that it attributes the increase to demographic changes and social legislation. The natural rate calculated from these considerations, however, traced the actual far less closely and peaked out in the late 1970s (Fortin, 1986; Economic Council of Canada, 1976, 1982; Kaliski, 1985).

To the extent that both demographic and legislative changes and those in industrial structure purport to explain the same rise in unemployment, the two have to be analysed jointly. Again, this cannot be done adequately by treating the various influences as additive,[11] and I shall return to this issue. Three of the authors just discussed nevertheless include such variables in their unemployment regressions. Charette and Kaufmann (1985) find their indicator of demographic change significant and the coefficient of SIGMA reduced when that indicator and those of unemployment insurance and minimum wages are included in this regression. Samson (1985) and Landon (1985) do not.

In much the same spirit, Fortin (1986) working in the older tradition, regresses the overall unemployment rate on the unemployment rate of men twenty-five and older as his aggregate demand indicator and 'structural variables.' The latter include indicators of demographic change, unemployment insurance, minimum wages, unionization, a trend (representing, in part, additional aspects of women's labour force participation), school enrolment, and SIGMA. He finds the effects of the last two variables 'negligible' (ibid., 12) and omits them in subsequent regressions. A natural rate or NAIRU is then calculated by setting the adult men's unemployment rate at 4.9 per cent, the rate, calculated from an augmented linear Philips curve, that corresponds to steady state inflation.

The studies just discussed are principally concerned to decompose changes in unemployment into changes in the natural rate and departures from it. They do not break down the increases in the natural rate itself into their frictional (turnover) and structural (mismatch) components. That distinction, however awkward, has important normative and policy implications and is, therefore, worth pursuing. Have changes in demographic and industrial composition given rise to structural problems? If so, were such problems increased or diminished by the fact that *both* the demographic and the industrial structure were changing simultaneously?

A number of investigators found that the increased unemployment resulting from the change in the demographic structure of the labour force was not merely a matter of larger weights being attached to groups with higher

11 Indeed, even the demographic and legislative changes are unlikely to be additive to one another. The descriptive literature is full of references to the interaction between youth employment instability, minimum wages, and the availability of training, for example. And the differential impact of unemployment insurance is now widely recognized (Glenday and Alam 1982a, b).

turnover. In addition, the relative unemployment of groups whose share in the labour force was increasing rose (Reid and Smith, 1981). Complementarity in production and the problems of absorbing relatively inexperienced workers were advanced as reasons for such structural unemployment (Kaliski, 1985).

There is also a literature on permanent changes in industrial structure and their impact on employment and unemployment. This is structural unemployment in the traditional sense of the word – that caused by a mismatch between characteristics of workers and the requirements of jobs. It is the hardest issue to investigate without a quite detailed model and the least amenable to synoptic treatment. Because of limitations of space and because the widely scattered information on job change and labour mobility in Canada has now been conveniently collected and annotated by Baldwin and Gorecki (forthcoming, especially chaps 6, 7).[12] I proceed largely by assertion and reference rather than presenting the mass of descriptive material. I first document the extent of changes in the industrial structure and then the degree of labour mobility in Canada to see what clues those might provide.

The issue, to recall, is whether, or to what extent, the current persistent high unemployment can be explained by inadequate adaptation of workers to non-cyclical changes in the structure of labour demand by skill categories, location, and other attributes. If, moreover, we are to attempt to make the somewhat hazy distinction between frictional and structural unemployment, we must emphasize changes the accommodation to which would require not merely search but significant restructuring of workers' human capital, such as might be involved in changing one's occupation, industry, or location.

The question is *not* whether there is technical or structural change. There always is. That is not a problem – that is progress.[13] Nor is the question whether such change results in some displacement of workers. It undoubtedly does. A problem arises when the rate of displacement of workers by structural or technical change outstrips the labour supply's capacity to adapt. Clearly, a change in that relationship requires either the pace of change to accelerate or the capacity to adapt to decline. The typical structural unemployment explanation does, indeed, argue that the pace of change in industrial structure or in technology has accelerated beyond the capacity of the labour force to adapt.[14] Unfortunately, I am unable to examine this question directly. Instead, I follow the unsatisfactory expedient of looking separately at the extent of the actual change in employment and the actual adaptation of the labour force. We shall thus be examining outcomes, not shocks, responses, and constraints. I believe the results are, nevertheless, illuminating.

12 I again thank John Baldwin for giving me such generous access, first, to some of his sources and references and then, to his work in progress.

13 Or, more neutrally, *Economic Development* (Schumpeter, 1934 [1911]). Schumpeter also taught that structural change and business cycles are not analytically separable.

14 In reality, the structure of the work force, too, has its own dynamics, and the adaptation is likely mutual; see below. Also, the qualitative aspects of change affect the speed of adaptation.

Much of the worry about lack of fit between the labour force and job requirements, as well as about the more general problem of disemployment is, at bottom, based upon considerations of technical change. There is now a large literature on this subject that cannot be reviewed here.[15] Most is much too broadly focused to be of much help with our immediate concern, but there are, at least, two exceptions.

Magun (1984), using input-output techniques, partitions changes in output and employment between 1971 and 1979 into those resulting from alterations in the final demand vector and in technology. The latter are, in turn, subdivided into changes in the requirements for intermediate inputs and for labour. Taken together, the technological changes would result in 8 per cent less labour being used. For most industries this is more than offset by changes in demand.

McCurdy (1987) analyses the issue of future technological impact using a much more sophisticated model than can be described here. It permits technology to affect domestic demand and net exports as well as the input-output structure, and simulates a number of alternatives. Assuming no adaptation, McCurdy concludes that 'for a plausible scenario, microelectronic-based technical change ... results in a cumulative displacement of 5 to 6 per cent of the required labour force from 1980–1990' (1987, 25). As he points out, and as will appear below, this is modest compared with recent demographic and industrial changes.

In what follows, I shall not consider results of technical change directly, but shall attempt to bypass them to some extent by considering the impact of industry shifts directly on employment rather than on output.

The Canadian economy has undergone substantial changes in industrial structure in the recent past and it has done so predominantly during periods when employment was relatively high and rising. I will confine myself largely to two recent studies that view the matter from a labour market perspective. Charette et al. (1986) use indices of dissimilarity[16] to examine the behaviour of the share distribution of employment[17] among twelve broad sectors[18] between 1947 and 1982. By 1982, 31.4 per cent of the 1947 structure of employment had been reallocated, aside from year-to-year changes that were subsequently reversed (Charette et al, 1986, table 2.2). The authors conclude that their results show 'no indication of an acceleration in the rate of structural adjustment' (ibid., 71). The same general impression of a substantial but not accelerating

15 For some discussion, see Kaliski (1985) and McCurdy (1987).

16 These are defined as the average absolute difference in percentage shares of employment (E) among industries (i) between a given year (t) and a base year (0):
$I_t = .5 \sum_{i=0}^{n} (|E_{it}/\sum E_{it} - E_{i0}/\sum E_{i0}|) \times 100$.

17 And of GDP and capital stock as well. They point out, as suggested above, that changes in employment reflect the combined effect of those in the structure of output and in productivity.

18 These are: agriculture, forestry, fishing, etc., mines, manufacturing, construction, utilities, transportation, etc., trade, finance, services, and public administration.

rate of structural change in employment is conveyed by more detailed data on 186 industries for the shorter period 1961–79, and by data for manufacturing industries (ibid., tables 2.11, 2.12, 2.14). The results seem robust to changes in the base year (Baldwin and Gorecki, forthcoming).

Parallel results, based on 1951–81 decennial census data for the experienced labour force are reported by Picot (1986a), who compiles a dissimilarity index of the change in shares among forty-two industries between censuses. He finds that 10.8, 10, and 6.8 per cent of the experienced labour force, respectively, have been reallocated during the three ten-year periods. The reduction in rate of change in the 1970s persists if agriculture is excluded. This result is confirmed by a more direct examination of industry-specific growth rates.

Particular interest attaches to industries or sectors that have grown very slowly or declined, since they may pose particularly difficult problems of adjustment. Agriculture is the only one of the major sectors to decline in employment – from more than 1.1 million in 1947 to less than 0.5 million in 1981. That decline was basically achieved by the early 1970s. Of Picot's remaining industries, seven had negative growth rates in the 1950s, six in the 1960s and only two in the 1970s. Taken together, these declining industries reduced the total increase in the experienced labour force by 10 per cent, 2.4 per cent, and a negligible amount, respectively (ibid., table B3).

I conclude that while the Canadian economy has certainly experienced considerable change in industrial structure in the postwar period, the rate of that change appears to have been smaller in the decade preceding the 1981 recession. It is, of course, quite possible that it has since accelerated. I know of no simple way of disentangling cyclical and trend elements in that recent period.

I have also not taken account of changes in the skill mix within industries. It is difficult to do so in any very satisfactory way, but there is no indication of an offset to the declining rate of change in industrial structure. Baldwin and Gorecki (forthcoming, chap. 7) have shown that for manufacturing as a whole, about 7 per cent of the work force were reallocated among twenty-three occupations between both the 1961 and 1971 and the 1971 and 1981 censuses. Within each of the nineteen individual manufacturing industries results naturally vary; but only two experience a larger reallocation in the 1970s.

It is, of course, possible that the labour force's ability to adapt to change has also declined. I know of no set of comparative results that would permit one to investigate that hypothesis systematically. It can be shown, however, that workers exhibit very considerable mobility between jobs, industries, and occupations. There are two sorts of evidence regarding this: one relates to the behaviour of the work force as a whole, the other to that of various groups of unemployed workers.

In a typical year of the 1974–80 period, the number of separations – essentially, all pay interruptions – is a third or more as large as that of workers employed at any time during that year (Robertson, 1987; Baldwin and Gorecki,

forthcoming, chap. 6). Some 43 per cent of such separations are lay-offs, another quarter are quits, and some 7 per cent are due to illness, pregnancy, or retirement. Not all the separations, however, are permanent. Of those who are working again within two years, many are once more with the same employer. More than half of those laid off return within two years, often more than once. So do 16 per cent of the quits, more than half of those who were sick, on maternity, or retired, and 32 per cent of the 'others.'

But mobility is not confined to changing employers. For a sample of workers experiencing unemployment 70 per cent changed their employer at least once between 1982 and 1984, 47 per cent changed their occupation, and rather more than half changed industry. Perhaps surprisingly, only 11.6 per cent changed their UI region[19] (Grey, 1985; Baldwin and Gorecki, forthcoming).

The most comprehensive study of those who have permanently lost their jobs is based upon a recent Statistics Canada Survey of Displaced Workers (Picot and Wannell, 1987). This labour-force-based survey examines the experience to the end of 1985 of approximately one million workers who have lost full time jobs between 1981 and 1984 and have not been rehired by their employer. By January 1986, 63 per cent of these workers were again employed (6 per cent only part time), 21 per cent were unemployed, and 16 per cent had left the labour force. However, 87 per cent had found a new job after being laid off, on average after twenty-four weeks. Seventy per cent of these new jobs were in a different industry[20] from that in which the lay-off occurred. There was a net movement out of manufacturing (and out of all but two of the twenty-four manufacturing industries), construction, and mining, and into each of the several services, agriculture, and forestry. Gross movements were much larger than net, with each of the twenty-nine industries for which details are shown having some entrants from other industries.

In contrast to the readiness with which they changed industries and occupations, only 17 per cent of the displaced workers moved. The same fraction undertook training. Possibly these are the groups that perceived themselves to be structurally unemployed and were thus willing to undertake major human capital investment. Those unemployed longer than six months were no more likely to move, but were more likely to take training (23 per cent).

This general picture of workers quite readily changing employers, occupations, and industries, but moving geographically to a much lesser extent is confirmed by a set of industry studies carried out at Employment and Immigration. These show, moreover, that the moves across industries are not confined to within a narrow cluster but range quite widely (Baldwin and Gorecki, forthcoming, chap. 7).

The general picture that I have drawn of a rate of structural change that was,

19 The regions involved are quite small. There are forty-eight of them, compared with twenty-two occupational classes.

20 On a thirty-five-industry classification

TABLE 1

Changes in share distribution of employment, ten provinces, 1966–84

	Indexes of dissimilarity[a]			
Years	Annual	Cumulative annual	Index base '66	Index base '75
		(per cent)		
1966	–	–	0.00	2.50
1967	0.19	0.19	0.19	2.30
1968	0.60	0.80	0.69	1.80
1969	0.45	1.25	1.13	1.37
1970	0.43	1.68	1.56	0.95
1971	0.19	1.87	1.63	0.86
1972	0.58	2.45	2.17	0.66
1973	0.33	2.78	2.05	0.52
1974	0.39	3.17	2.34	0.34
1975	0.34	3.51	2.49	0.00
1976	0.46	3.97	2.80	0.46
1977	0.39	4.35	3.12	0.84
1978	0.38	4.73	3.44	1.12
1979	0.31	5.05	3.74	1.37
1980	0.57	5.62	3.71	1.91
1981	0.55	6.17	4.27	2.39
1982	0.62	6.79	4.64	2.52
1983	0.41	7.20	4.25	2.25
1984	0.51	7.71	4.28	1.85

Annual averages						
a Period	1966–81	1966–84	1975–81	1975–84	1975–69	1975–66
b Annual change	0.41	0.43	0.55	0.47	0.39	0.38
c Index base, t_0	0.28	0.24	0.40	0.21	0.22	0.27
d Difference ($b - c$)	0.13	0.19	0.15	0.26	0.17	0.11

a The index is defined as the average absolute difference in percentage shares of employment: $I_t = 0.5 \sum_{i=0}^{9} (|E_{it}/\sum E_{it} - E_{i0}/\sum E_{i0}|) \times 100$, where I_t is the index for year t and $E_{it}(E_{i0})$ is the employment in the ith province in the current (base) year. For annual changes the previous year is the base.

SOURCE: Statistics Canada, *Labour Force*

if anything, declining before 1981 and considerable labour mobility, except, perhaps, geographically, does not suggest that any great amount of the post-1981 increase in unemployment is likely to be the result of industrial and occupational mismatches.[21] This is not to deny the obvious fact that the primary sector and those parts of other sectors that depend upon it are depressed and that no amount of domestic demand stimulation is at all likely to remedy this situation. The agricultural problem is a political one and well outside my scope, as are the politics of oil. It is appropriate, however, to ask

21 There might well be a problem of structural underemployment however. Ninety per cent of the involuntary part-time employment mentioned earlier, and nearly as much of the voluntary, is to be found in trade and the services (Akyeampong, 1986, table 4). It could well be that this is a permanent requirement of jobs in these industries to which the labour force has difficulty adapting.

how much of the decline in the resource sector is permanent and how much of it might be related to world-wide cycles and be reversible.

The data do suggest that geographic mobility is considerably less than that between jobs, employers, or occupations. This is unlikely to be a simple matter of unwillingness to move. Geographic-occupational-industrial interaction, multi-earner families, and job prospects in the receiving regions are some of the complications that readily come to mind. For the period covered by the Grey (1985) and Picot and Wannell (1987) studies, the poor employment prospects in much of the country undoubtedly played a role.[22]

The relative immobility of labour geographically could be a source of structural unemployment. I shall not attempt to summarize here the enormous body of evidence on regional differences in incomes and employment opportunities (Norrie, 1986). Preliminary work on regional data from the Labour Force Survey suggests that the cumulative changes in employment shares among regions have been smaller than those among industries, but the differences are far smaller than those in labour mobility. As table 1 indicates, 4.3 (2.4) per cent of the 1966 (1975) distribution of employment among provinces (an average of 0.3 (0.4) per cent per year) was relocated by 1981. After 1982 the structure regressed towards those of the base years. Although, based on 1966, the average annual change in the index is remarkably steady at 0.27–0.29 per cent after 1972, the 1975-based index shows larger changes after that year than earlier.[23]

For the 1970s Glenday and Jenkins (1981) suggest that immobility was not responsible for increased differences between unemployment rates in eastern and western Canada. Taking as given the natural population increase and growth in employment and labour force participation in each province, they calculate the migration flows that would have been needed to maintain unemployment rates at their 1970 levels. They find that the required net flows would have been modest – of the same order of magnitude, if not always in the same direction as those actually occurring. Moreover, these net flows were only a fifth as large as the gross flows from which they resulted, and their direction had been subject to quite rapid changes.

So far I have followed the convention in the literature that the structure of demand for labour changes and the supply adjusts. But this is manifestly an inadequate description of developments in the Canadian labour market. The postwar baby boom was obviously independent of the structure of demand for labour some twenty years later, as were some important determinants of women's participation rates (Gunderson, 1980, 52, 57). How did these forces interact?

22 Vanderkamp's recent survey (1986, 56, 57) reports that both wages and job prospects in the receiving region affect migration, although it is not clear how job prospects are best measured.

23 There is also some evidence that regional recovery from the recent recession has been unusually uneven (Bank of Canada, 1986, 13–15; Moloney, 1986).

Clearly, one cannot investigate this matter without taking account of the qualitative particulars of the changes that in fact occurred. If each industry's demand for labour were rigidly structured by age and sex, and labour force participation were a purely exogenous demographic and sociological variable, we could speak of changes in the structure of demand for and supply of labour either adding to the structural disequilibrium or offsetting one another. The reality is clearly more complex, even if we neglect the interdependence of labour supply and commodity demand decisions. Labour force participation responds to both wages and quantity rationing in the labour market. The demand for labour is also influenced by these and many other considerations. There is, at most, a loose association between the demographic groupings and work-relevant characteristics and preferences. Again, the nature of jobs is only loosely related to the industry classification. As already indicated, I have not attempted to construct a model of supply, demand, and their interaction in the labour market that would permit anything approaching an adequate analysis of how the allocation of workers with particular demographic characteristics to industries takes place, what disequilibria might result and how rapidly they are eliminated. What we (Beach and Kaliski, 1986c) have done is to examine some industry employment data by sex and broad age group that might be thought of as the result of the operation of such a model.

Between 1966 and 1983[24] the number of women employees had more than doubled from under 2.2 million to nearly 4.5 million; the total number of employees increased by little more than 50 per cent over the period. The 41 industry groups into which our data are divided experienced employment changes ranging from −30 per cent (Tobacco Manufacturing) to +232 per cent (Business Services). For major groupings, the range was from 9.5 per cent for the primary sector (only 1 per cent of the employees of which in 1966 were female) to 89 per cent for the tertiary (45 per cent).

The fraction of all employees who were female increased from 30 per cent in 1966 to 42 per cent in 1983. That fraction increased in virtually all of the industry groups that we examined. If there had been no change in industrial structure, that is, if all industries had grown at the same rate, and the extent of substitution of women for men employees in each industry were unaffected by this, some 400,000 fewer women (9 per cent of the 1983 total) would have been absorbed into employment. Thus, although within-industry substitution was the principal mechanism by which more women were employed, their employment also increased because the industrial structure shifted towards industries that employed women intensively.[25]

On the basis of hypothetical calculations of this sort, some one half of the 107 per cent increase in the number of women employees is accounted for by overall growth, a third by substitution within industries, and the remaining sixth by changes in industrial structure.

24 The results are not qualitatively different if one considers 1966–81 instead.
25 The interaction, too, was positive, but small (40,000).

Employment of women aged 25–54 grew even faster – 174 per cent. General growth consequently accounted for less than 30 per cent of the increase. Asymmetric growth of industries that employed women of this age intensively in 1966 was also a weaker mechanism. Intra-industry substitution was much more important.

Without a structural model, we cannot identify the primary changes in the structure of labour supply and demand, let alone say to what extent they resulted in structural mismatches, adaptation, and increased unemployment. It is clear, however, that the demographic and industrial shifts appear to have been mutually accommodating, rather than the opposite. Moreover, the simplest explanation of simultaneous substitution of women for men in (virtually) all industry groups and an increase in the employment share of women-intensive industries is that it is supply-side changes that dominated.

In the case of young people (fifteen to twenty-four) the problem of causation is less formidable, since their share of the labour force between 1966 and 1974[26] rose largely because of increases in the size of the cohort, not in participation rates.[27] Changes in industrial structure had no impact on the absorption of young people of both sexes with the very slight impacts on men and women offsetting one another.

Another explanation of high and rising unemployment, prominent in European discussion, relies not upon increasing frictional and mismatch unemployment but upon real wages rising above a level that is compatible with 'high employment.' This sort of 'classical unemployment' is perhaps most clearly distinguished from the 'Keynesian' in the 'equilibrium with rationing' models of Malinvaud (1977) and Muelbauer and Portes (1979). Nominal prices and wages are assumed to be temporarily sticky. If there is excess supply in both goods and labour markets, we have 'Keynesian' unemployment. Firms could profitably employ more workers at prevailing wages if only they could sell the additional output at prevailing prices. Households would purchase more goods if only they could secure employment. The typical 'Effective Demand Failures' of a monetary economy (Leijonhufvud, 1981, chap. 6) prolong the situation.

Classical unemployment arises if there is excess supply in the labour market and excess demand in the goods market. Firms could make additional sales at prevailing prices but the rising marginal (labour) cost of producing the goods would exceed the (net) marginal revenue. Real wages are too high relative to the marginal product at full employment. Since the disequilibria in the two markets do not here reinforce one another, the obvious question is how the situation arose and why it persists.

The standard reply in the European context, is that a 'real wage explosion' took place in the late 1960s and early 1970s. This was followed by increases in

26 After 1974 the employment share declined and was below 1966 levels by 1982.

27 Participation rates, however, did rise: For young people of both sexes they were 56.2 per cent in 1966 and 62.5 per cent in 1974.

the cost of energy and raw materials which squeezed value added, again raising the product real wage. Increases in payroll taxes made matters worse. Widespread indexation maintained the consumption real wage, impeding adjustment. Other impediments adduced include 'insider contracts' that adjust the real wage for the sole benefit of those left in employment (Blanchard and Summers, 1986) and a variety of job protection policies that reduce both hirings and separations (Bruno and Sachs, 1985, 167ff; Bean et al., 1986b).

In an alternative account of classical unemployment (Malinvaud, 1978, 1984, 1986; Sneessens and Dreze, 1986) the stress is on the impact of the unprofitability and the high relative cost of labour resulting from above equilibrium real wage, on capital capacity. Investment declines and is misdirected towards excessively capital intensive forms of equipment. A putty-clay technology then precludes full employment even if the real wage declines, although classical unemployment may well be transformed into Keynesian (Malinvaud, 1984).

The two versions can be reconciled in a variety of ways: Putty-clay technology may prevail only in the 'very short run' (Sneessens and Dreze, 1986, S99). Firms may differ in their technologies. Perhaps more reasonably, short-run technology might permit substitution between labour and capital but only within fairly narrow limits. Bruno and Sachs (1985, 167) keep their technology neoclassical, but recognize, following the wage explosion and increases in the cost of materials, a 'third phase [in which] low profitability and rising unemployment slowed the rate of capital accumulation and productivity growth. Real wages *were* reduced, but so was productivity growth, with the result that the excess of wages over full-employment productivity persisted into the early 1980's.' A number of other studies found such a 'wage gap,' in many cases a large one, since the early 1970s or earlier in a number of the European countries studied. While the individual studies often urged caution, this explanation of European unemployment was widely reported to be the dominant one (Dymond, 1987, 44–5; Ellman, 1987, 58). This was often contrasted to the situation in North America and Japan and two multinational studies that included Canada found no evidence of wage gaps there (Artus, 1985; Bruno and Sachs, 1985).

Studies of this sort have now been severely criticized on a number of grounds. McCallum (1985) points to serious difficulties with their estimating procedures. Pencavel (1987) shows that the empirical validity of their maintained hypothesis of an inverse relationship across countries between real wage flexibility and employment growth is suspect. Helliwell (1986a) examines a large number of studies in detail with the aid of an explicit analytical model. He concludes that the imperfect comparability of these studies as well as their individual flows, including insufficient attention to demand and other aspects of a complete model, leaves us with little reliable knowledge about the extent of real wage unemployment.

A number of papers at a 1985 European conference on *Unemployment* (Bean

et al., 1986b) also urge that attention be shifted to more general models. Layard and Nickel (1986, S121) attempt to 'cut[s] through the fruitless debate now raging (especially in Europe) as to whether current unemployment is "classical" or "Keynesian." ' The proposition is that if firms are not pure price takers, as is likely in a world of sticky prices, 'firms' demand for labour will depend upon both the real product wage and the level of real aggregate demand.' Real wages, prices, and employment all are endogenous. The point is reiterated in a multi-country context by the editors (Bean, et al., 1986a). From estimates that include data through 1983 they conclude that 'The decline in demand, relative to potential, has been an important proximate cause of the rise in unemployment, especially in the European Community. However, it is clear that supply-side factors have also played a significant role' (ibid., S19). A number of the 'country' papers in the volume also refer to unfavourable world or internal demand conditions in the 1980s, as does Bruno (1986).[28] Whatever may have been thought of Europe, until recently the consensus view was that in Canada unemployment was not the result of excessive real wages. This consensus was based not only on the flawed multinational wage-gap studies just discussed and on the (varying) attribution of unemployment to other causes – demand deficiency and structural changes – but also on some explicit study of the issue.

Helliwell (1984) finds that Canada escaped real wage unemployment, although it is prone to 'real wage creep' and shared, in part, the energy shock. He simulates 'hypothetical history,' based on the MACE model, that projects steady growth starting in 1974 in an environment free of shocks and policy disturbances and generates unemployment rates of around 5 per cent. In this environment the Canadian economy is subject to a 'real wage creep' of about 1 per cent per annum[29] that 'eventually leads to somewhat higher rates of ... unemployment' but does not 'affect results over the 1974–82 period' (ibid., 194). In actuality, output per employee fell 10 per cent below the steady state case in 1981 and 13.4 per cent in 1982. The substitution of labour for energy accounted for some 3.5 to 4.5 percentage points of this productivity decline and underutilization of employed factors due to low sales and low profitability for the remainder (ibid., 211).[30] The energy price shock has little impact on domestic output, most of the fall in which is the result of world recession. In the context of real wage unemployment the important policy instrument is the AIB, which reduced real wages by a cumulative 7 per cent leading to a larger employment of labour than would otherwise prevail.[31]

28 But Bean et al. (1986a, S52) also report the earlier view as still having currency.

29 Wages rise at 3 per cent per annum and productivity at 2 per cent. It is probably important not to overgeneralize this result, which is bound to reflect, in part, past inflation and the assumed shift to 'cold turkey' fiscal and monetary policy.

30 This does not imply that none of these is attributable to the OPEC shock. Nor are they entirely the result of demand fluctuations.

31 McCallum (1986b), argues that the AIB's impact is larger than that if one takes into account its impact on the (foreign) current account balance.

Two recent studies (Grubel and Bonnici, 1986; Daly and MacCharles, 1986) have challenged this consensus about the unimportance of real wage unemployment in Canada. Although they differ on some points, the two have important themes in common: both see the divergence of Canadian and United States unemployment rates since the 1981–2 recession as evidence that some new line of explanation is needed.[32] Both find that explanation in a delayed response to excessive real wages. Both argue that an exchange rate correction cannot ameliorate the problem.

Grubel and Bonnici argue that nominal and real wages rose in Canada relative to the United States since the late 1960s, and unit labour costs since that time fail to reflect this change only because of a shift to a much more capital-intensive technology in Canada. The effect on employment was masked until recently by a natural resource boom.[33] With the collapse of the boom, workers can no longer be employed at the persistently high real wages.

Daly and MacCharles focus on manufacturing. They argue that unit labour costs in Canada have long been high by international standards and remain so. Since 1973, 'real wages per hour in Canadian manufacturing have moved ahead of the real output per hour, relative to the experience of the similar measures in both the United States and Japan.' In consequence, the industry has been unprofitable and investment in it depressed. Although neither development is new, 'Canadian manufacturers will be more seriously affected by these high costs in the 1980s and 1990s than in former years with increased pressure of international excess capacity in manufacturing and lower Canadian tariffs' (Daly and MacCharles, 1986, 29).

There are many interesting issues of evidence, measurement, and aggregation[34] raised by these studies that I cannot discuss here. I confine myself to a few comments on major issues. First, the two studies would seem to be examples of the neoclassical-production-function and putty-clay approaches to real wage unemployment analysis, respectively, and share some of the faults of such studies, already discussed. In particular, there is little attention to documenting the explanations offered or exploring alternatives within a larger model. One would, for example, welcome more evidence about the changes in

32 Two earlier studies have addressed this particular question: McCallum (1986a) attributes the differences in unemployment to those in the impact of raw material prices and in monetary policy. Ashenfelter and Card (1986, S188) fail to find an explanation but are emphatic that the 'data certainly do not provide any evidence that relative [real] wage rigidity is a major source of divergence in Canadian and U.S. unemployment rates.' They also argue that real wages have not influenced employment in either country (ibid., S189). Wilson (1985) in a more general context sees most of the differences between the United States and Canadian recession and recovery as a result of macro-economic causes. But he also finds that lesser wage flexibility in Canada aggregated the results.

33 Although much of the discussion takes place in the context of the resource sector, the results are clearly intended to apply to the entire economy. Unfortunately, no explicit links are constructed, and the substantial differences between the resource sector and the rest in terms of wage, productivity, and investment behaviour (McDougall and Stuber, 1986) are not discussed.

34 For a discussion of some of these see Sharpe (1985).

the factor mix described by Grubel and Bonnici. It seems doubtful that they are purely a matter of real wage substitution. The evolution of the full-employment factor mix is also an important issue in the wage-gap literature. How different from the United States was Canada in its capital deepening? How does one reconcile these results with Helliwell's (1984, 211) findings that in the 1970s '[a]lmost all the changes in factor proportions, sales, and profitability were due to the OPEC price shocks and the related changes in inflation and real GNP elsewhere in the world,' and that the degree utilization of employed factors is a most important variable in studying productivity changes?

More generally, demand forces are, in both studies, assigned exclusively the role delaying the response of unemployment to changes in real wages, without much examination. Yet, as both Helliwell (1984, 1986a, b) and the newer European literature suggest the demand side can supplement or supplant real wage explanations. Indicators of disequilibrium have to be interpreted with some care. A decline in exports or 'competitiveness' can result from a decline in world demand as well as from domestic real wage developments (Sneessens and Dreze, 1986). Unprofitability and reduced investment may well signal actual and expected demand conditions as well, or instead of, a real wage squeeze (Bean et al., 1986a; Bruno 1986, S44).

Second, the studies are valuable in insisting on the openness of the Canadian economy and its implications. To the extent that the demand for an open economy's goods is independent of domestic factor income, a reduction in real wages or any other component of domestic costs would stimulate output and employment. In a small open economy any unemployment in the tradeable sector *has to be* classical (Muelbauer and Portes, 1979, 361–2). But the domestic costs have to be correctly measured, in the case of wages as product wages. It is simply not correct, in general, that a constant CPI-deflated wage combined with exchange depreciation cannot restore international competitiveness, as Grubel and Bonnici (1986, 30) contend.[35] Nor is it clear why an exchange rate correction can help restore competitiveness in the resource sector but cannot do so in manufacturing (Daly and MacCharles, 1986, 46–8). Speaking loosely, the contention here seems to be that in manufacturing inputs are priced in foreign currency to a greater extent than outputs. I cannot pretend to know if that is so, but I do not believe that one can deduce it from the fact that manufacturing imports exceed exports, as the authors suggest (ibid., 47). Those domestic manufacturers that do not export, generally compete with the imports and so will find their competitive position improved.[36]

35 For instance, this is not the case in a simple model of an underemployed small open economy with tradeable and non-tradeable sectors and no other source of wage or price pressure.

36 Of course, as Daly and MacCharles (1986, 47) point out, assumptions about pricing also matter. But Dornbusch (1987) has shown that for a number of models competitiveness against imports improves even if the profitability of exports does not, so long as costs are fixed in domestic currency.

In discussing an open economy it is also very important to be specific about what one is assuming about the rest of the world. Are such propositions as those that the real wage is too high, or the real exchange rate at its equilibrium level, or the foreign accounts in balance intended to apply to a world that is in macro equilibrium? The discussion of world-wide excess capacity in manufacturing and the state of the resource sector in the two studies suggests rather that their frame of reference is the world of the moment. That makes the attribution of unemployment to real wage disequilibrium particularly suspect, given the recent European discussion.

Finally, how rigid are real wages in Canada? Wilton's (1986, 276) conclusion that 'the Canadian Phillips Curve is alive and well, in both the private and public sectors' right through 1983 contradicts the more extreme versions of the hysteresis story.[37] Two recent updates (Fortin, 1986 and Kumar, 1986), that include observations through 1985, suggest no structural shifts in such Phillips curves. Kumar (1986, 4–6) does, however, report that new contract settlements appear to reflect considerable flexibility, including removal of COLA clauses, nominal wage cuts and freezes, two-tier wage systems and lump sum payments in lieu of raises.[38] The OECD (1986, 22–4) reports that 'Canada recorded the fastest deceleration in wage inflation of any OECD country in 1982 and 1983.'

For manufacturing, the Department of Finance (1986) reports that whereas between 1973 and 1982 unit labour costs in Canada in domestic currency rose at about the average for major OECD countries – roughly the same rate as France and faster than the United States, Germany, and Japan – the situation was very different more recently. Between 1982 and 1985 domestic unit labour costs in Canada rose very slightly, whereas those in the United States and Japan fell. When depreciation is taken into account, unit labour costs fell substantially against the two major trading partners, the USA and Japan, although they rose against the European countries. To mid-1986 appreciation of the yen raised Japanese costs dramatically compared with those in Canada and the United States, which moved in parallel. This accords well with the evidence already cited, that Canadian wages are not rigid in terms of foreign currency – and that may well be the more appropriate way of measuring product wages in the tradeable sector. All this hardly sounds like a country plagued by impossible real wage rigidity.

Neither does it seem likely that, as a result of past unprofitability, the capacity required to move to higher employment is now, or will soon be, lacking. Investment in energy and in the resource sector more generally remains low, but that fairly clearly is a matter of depressed world prices, not high real wages. Whether these price declines are cyclical, as history would

37 While some of Wilton's equations use the help-wanted index, which may be dominated by 'insider' contracts, as their slack indicator, those using unemployment rates, clearly an outside indicator, fit as well. The unit coefficients on price expectations make these, in effect, real wage equations. See also Fortin (1986, revised).

38 See Kumar et al. (1986, 69–83) for more detail on recent labour contracts.

TABLE 2

Fraction of group's total unemployment accounted for by longest 30 per cent of spells AWPS, 1980

	Men	Women
	(per cent)	
All, Canada	69.4	65.7
Age		
15–19	62.3	62.6
20–24	68.7	67.1
25–44	69.7	66.0
55–64	73.4	70.1
Marital status		
Single	68.4	66.3
Married	68.2	64.7
Other	71.3	67.1
Education		
Elementary	71.1	69.6
High school	68.0	66.1
Some post-secondary	67.6	62.5
University	68.1	64.7
Regions		
Maritimes	67.7	
Quebec	67.6	
Ontario	66.3	
Manitoba-Saskatchewan	63.1	
Alberta	62.5	
British Columbia	62.3	

SOURCE: Calculated from AWPS microdata by Charles M. Beach and S.F. Kaliski. See Beach and Kaliski (1987) for a fuller description.

suggest, or permanent and, more generally, whether Ca..ada has lost its competitive advantage in this sector are matters of considerable debate which I cannot enter.

In manufacturing, as capacity utilization has returned to near normal levels, 'investment has strengthened considerably during the past four years of recovery' (Bank of Canada, 1987, 15). Again, this hardly sounds like the picture of a sector resigned to permanent unprofitability and excessive real wages. It may be, however, that the 'emphasis on modernization' said to characterize that investment will result in a more capital-intensive technology than is compatible with high employment at existing real wages if the resource sector does not revive soon.

I conclude that there is little evidence that productivity shocks, lack of capacity, insider contracts, or excessive and inflexible real wages are largely responsible for high unemployment in Canada or are likely to prevent a return

to fuller employment. That is not to deny that the recession may have been milder and the recovery faster if real and nominal wages were more flexible.

I turn, finally, to an examination of unemployment itself for what clues that can provide. It is well known that one cannot detect the nature of unemployment by examining the characteristics of the unemployed (Lipsey, 1965; Kaliski, 1967). I propose, therefore, to look at the structure of unemployment not by personal and skill characteristics of the unemployed, but by duration. Since Clark and Summers (1979) first forcefully directed attention to this issue, it has been well documented that unemployment is highly concentrated – a large fraction of the total amount of unemployment is accounted for by the relatively few long spells.

Whether one examines the distributions of spells of unemployment or those of the total amount of unemployment experienced by individuals over some period, and independently of one's particular data base and details of measurement, the phenomenon asserts itself.[39] Moreover, this concentration is much too pronounced to be the result of chance, as represented by a stationary probabilistic process such as a Markov chain (Clark and Summers, 1979; Hasan and de Broucker, 1982, 1985). Either individual probabilities of escaping unemployment diminish with the time already spent in that state or we are dealing with heterogeneous populations. Very likely both these factors play a role. 'Marginal' workers have long durations of unemployment to start and become more marginalized the longer they are unemployed.

Charles Beach and I recently examined the microdata on unemployment from the Annual Work Patterns Survey (AWPS) covering the years 1978, 1980, and 1982. Our results confirm the observations already reported but provide additional detail. What is unusual about them, aside from the methodology,[40] is that we report entire decile distributions or Lorenz curves and are able to assess the statistical significance of any differences observed. I shall not attempt any detailed account here. Suffice it to say that, however we subdivided our data by gender, age, marital status, education, region, year, and combinations of these categories, the result of substantial concentration persisted. An example is shown in table 2. It will be seen that in 1980, for both men and women, the longest 30 per cent of spells accounted for two-thirds or more of the group's total unemployment. This impression of high concentration persists when one disaggregates by age, marital status, education, region, and various combinations of these categories (Beach and Kaliski, 1986a, b, 1987).

That is not to say that such variations do not make significant differences. They do. Concentration typically increases with age and decreases with

39 For a brief tabular summary of this evidence see Beach and Kaliski (1984, table 1), reprinted in Kaliski (1985, table 2–11).

40 The methodological issues concern largely the methods of estimating distributions of completed spells on the basis of data on interrupted or incomplete spells with pronounced censoring and sampling biases. Since the true underlying distributions are not known, we chose to use distribution-free methods in so far as possible (Beach and Kaliski, 1986a, b).

education. It is greater for men than for women and for years and regions of high unemployment (Beach and Kaliski, 1987, table 5). Both the mean duration of an unemployment spell and the duration of spells in the upper tail of the distribution tend to be affected in the same direction as concentration. The fact remains, however, that the more homogeneous groups still exhibit a very high degree of concentration. The long-term unemployed cannot easily be characterized by age, sex, education, or region. Of course, it is quite possible that we (or our sources) have not disaggregated finely enough or in enough dimensions to pinpoint the characteristics of those with long spells of unemployment. For the present discussion, it is clearly a pity that we did not disaggregate by industry and occupation, for example.[41]

On the basis of these results, we echo Magun's (1982, 66) conclusion based on very different and earlier data that the degree of concentration of unemployment in Canada 'is not consistent with the view that unemployment is mainly frictional and voluntary.' Whether this is the result of persistent demand deficiency or of structural factors we cannot tell on the basis of the work reported here. The fact that such observations are so pervasive over space and time and that Magun (1982, 66) and others report that over a period as long as five years in the late 1970s those with a past history of prolonged unemployment tend to repeat the experience, would tend to favour a structural interpretation. But we are unable to elicit the nature of the mismatches that are involved.

There is some evidence that the concentration of unemployment in long durations may be increasing. Beach and I (1987, 264) observed the increased concentration of unemployment spells in 1982 as compared to 1978 and 1980 and attributed it, tentatively, to the recession. There has since been some evidence that the change towards greater concentration of unemployment on long spells may be continuing. Cohen (1986) reports on the basis of annual averages from the Labour Force Survey that spells exceeding a year's duration have increased from 3.7 per cent of all spells in 1979 to 4.8 per cent in 1982 and 9.3 per cent in 1985. Spells lasting six months to a year stood at 11.8, 15.1, and 16.2 per cent for the three years. Long duration unemployment thus appears to have been increasing both when the overall level of unemployment increased dramatically and when it declined slightly. Substantial, though by no means uniform, increases in the number of unemployment spells of more than one year's duration between 1982 and 1985 were, moreover, recorded both by broad industry and occupation groups that experienced increases in total unemployment and by those that experienced declines.

As always with post-recession events, it is difficult to know how much to

41 But given the discussion of mobility in these directions above and the fact that our data contain only the very broadest industry and occupational groupings, it is very doubtful that that would have been very illuminating. In principle, one might also wish to search for personal or other characteristics that might render members of any group both immobile and at the margin of employability within it.

attribute to incomplete recovery and how much to other causes. It is also necessary to bear in mind that direct measurements of spell durations from monthly surveys are very seriously flawed as indicators of the true population of completed spells. Unless these biases have changed over time, however, the trends shown might be applicable to completed spells as well.

CONCLUSIONS

It must be quite clear now that I have to conclude that we cannot, on the basis of our present knowledge, partition unemployment into portions attributable to insufficiency of aggregate demand and to various structural causes. Nor can we prescribe an optimal package of cures, even aside from the various 'side effects' of policies to combat unemployment.

That is not to say, however, that we know nothing. We know, principally on the basis of macro economic analyses which are not seriously challenged by other evidence, that the world-wide recession of 1981–2 was caused by a policy-induced reduction in aggregate demand. We know, too, that much of the high unemployment of that time and the present did not result from any widespread increase in frictions. Nor does much of our unemployment seem likely to be the result of the more obvious sorts of mismatches and lack of adaptability. Labour mobility, save perhaps among regions, seems too high for that. It is also extremely unlikely that much of it is one sort or another of 'excess real wage' unemployment or that real wages are so inflexible in this country as to cause so much unemployment to persist so long.

Finally, we know that unemployment is highly concentrated in long durations – the relatively few long spells account for a large and possibly increasing share not only of total unemployment but of that of all subgroups examined. That would seem to signal either structural problems of a fairly subtle sort or long-continuing demand deficiency in which the 'first fired' have not yet been rehired. Indeed, it is quite likely that, just as in Malinvaud's world classical unemployment, caused by a destruction of physical capital, can turn Keynesian, so here some Keynesian unemployment may have, through a destruction of human capital, become structural.

But, in view of the recurrent history of unemployment analysis, perhaps my most important message is methodological. It is simply that in this area, as in others, we must continually remind ourselves of some basic principles: if the subject can be satisfactorily analysed at all, it can only be so analysed using adequately general equilibrium and disequilibrium models; what we observe directly are results, not causes and effects – we must be extremely wary of discussing relationships between highly interdependent endogenous variables as if they were something other than that; and, finally, in an open economy we must look well outside our own borders before we can make sense of our own part of an interdependent world.

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